Museums for America

Sample Application MA-10-14-0551-14
Project Category: Learning Experiences
Funding Level: $25,001-$150,000

USS Constitution Museum

Amount awarded by IMLS:	$150,000
Amount of cost share:	$418,329

Attached are the following components excerpted from the original application.

- Abstract
- Narrative
- Schedule of Completion

From Forest to Frigate
Abstract

The Project: The USS Constitution Museum seeks to develop a research based hands-on and minds-on project for families, *From Forest to Frigate*. This integrated exhibit and programming initiative will offer all ages the opportunity to learn about the origins of USS *Constitution* through the lens of the people who dreamed, designed, built, launched, and outfitted the Ship in the 1790s. Intergenerational audiences will use a broad range of participatory activities to examine how *Constitution*'s construction reflected innovation, ingenuity, and ambition in Boston and across the young nation. The Museum's existing expertise and on-going study of family engagement will inform the cross-disciplinary offerings spotlighting the institution's new research on the people involved in the creation of the Ship and STEM concepts inherent in the story. *From Forest to Frigate* will be the Museum's centerpiece as the Ship embarks on a 4 year, multi-million dollar restoration.

The Opportunity: In 2015, USS *Constitution* enters dry dock for its first major overhaul in twenty years. The Ship's location out of the water in a dry basin directly outside of the Museum provides a singular opportunity for an institutional focus on *Constitution*'s innovative design and structure. The Museum is uniquely situated and equipped to provide visitors with exhibits and programming that interpret *Constitution*'s construction and innovative design, which will be uncovered and on view throughout her restoration. *From Forest to Frigate* will meet the challenge and opportunity of the Ship's restoration by fulfilling two of the Museum's primary strategic objectives: (1) *Increase awareness of* Constitution*'s innovative design, construction and preservation through engaging and memorable hands-on experiences*; and (2) *Increase visibility and be recognized as an innovative and dynamic institution providing positive memorable experiences for all ages*.

Intended Results: *From Forest to Frigate* will have far-reaching, strategic benefits for the Museum by dramatically increasing its capacity to serve families while *Constitution* is in dry dock. The project includes the development of a 3,400 sq. ft. exhibit featuring multiple interactives and 16 new participatory programs. This integrated exhibit and program project will expand the Museum's capacity to serve families by creating a memorable, engaging, and informative exhibit and integrated programs; sparking a cross-disciplinary interest in and increased appreciation for USS *Constitution*'s innovative design and construction; and fostering emotional and personal connections. Families will learn about the Ship's design, construction, and the people connected to her origins, and they will recognize the Museum as a valuable resource for learning and engagement. Project staff will measure success by conducting formative and summative evaluation of exhibit elements and programs. Successful techniques for program facilitation identified in *Forest to Frigate* programs will be disseminated to colleagues via publications, presentations and the Museum's website devoted to family learning, familylearningforum.org.

Public Benefits: *From Forest to Frigate* will be a core interpretive experience for the expected 2.5 million visitors who come to Boston during the Ship's 4 year restoration. The Museum's policy of admission by donation ensures that everyone has access to the experiences and information provided by the project. The cross-disciplinary nature of the project will help introduce Museum visitors to STEM concepts inherent in *Constitution*'s and America's history. *From Forest to Frigate* will leverage the Museum's pre-existing and ongoing expertise in family learning to offer enjoyable, informative, social, and educational experiences for children *and* their adult companions to share together.

The Timeframe: October 1, 2014 - September 30, 2016

1. PROJECT JUSTIFICATION- **Statement of need**: The USS Constitution Museum seeks a grant of $150,000 to underwrite its upcoming research based hands-on and minds-on project, *From Forest to Frigate*. This integrated exhibit and programming initiative will offer all ages the opportunity to learn about the origins of USS *Constitution* through the lens of the people who dreamed, designed, built, launched, and outfitted the Ship. *Forest to Frigate* will have far-reaching, strategic benefits for the Museum by dramatically increasing its capacity to serve families when *Constitution* enters dry dock for its first major overhaul in twenty years. The Ship's location out of the water in a dry basin directly outside of the Museum provides a singular opportunity for institutional focus on *Constitution*'s innovative design and structure. Scheduled to begin in 2015, *Forest to Frigate* will offer intergenerational audiences a broad range of participatory experiences. The project's cross-disciplinary offerings will be informed by the Museum's existing expertise and on-going study of family engagement, and will be fueled by the institution's current focus on the people involved in the creation of the Ship and the STEM concepts inherent in the story. This initiative, which will examine ways that *Constitution*'s construction reflected innovation, ingenuity, and ambition in Boston and across the country, will be the Museum's centerpiece as the Ship embarks on a 4 year, multi-million dollar restoration.

Forest to Frigate will be a core part of the interpretive experience for the expected 2.5 million visitors who visit the 216-year-old *Constitution* owned and operated by the U.S. Navy and the adjacent **non-profit** Constitution Museum during the 2015 – 2018 restoration. [See SuppDoc 1] USS *Constitution,* designated "America's Ship of State" in 2009 by President Obama, is the oldest commissioned warship afloat in the world. The Ship is a cherished American landmark and enduring national symbol remembered for her string of unprecedented victories over the Royal Navy during the War of 1812. The undefeated ship gained a reputation for being unbeatable as cannon balls bounced off her strong oaken sides as if they were made of iron. "Old Ironsides" emerged from the war as an important symbol of America's strength. While it was the Ship's innovative design and construction that was the real "iron" in "Old Ironsides," this aspect is often overlooked. Coinciding with the Ship's restoration, *Forest to Frigate* seeks to offer families a new way to see and think about *Constitution*. Visitors expecting to see the famed ship floating majestically at the pier will instead witness *Constitution* out of the water with her sleek hull shape and complex inner structure exposed. As shipwrights employ modern and traditional methods to restore *Constitution,* the *Forest to Frigate* exhibit and programs will help visitors expand their view of the significance of *Constitution* and gain greater appreciation for the Ship's original creators.

Audience: Although the Museum believes the *Forest to Frigate* project will appeal to all of its 350,000 visitors a year, the focus is on families. The timing of the project during *Constitution*'s landmark restoration, as well as the Museum's location and policy of admission by donation place the Museum in an ideal position to engage a geographically, racially, and socio-economically diverse family audience. This project will offer enjoyable, informative, social, and educational experiences for children *and* their adult companions to share together. These experiences will be designed to spark emotional connections, curiosity, discovery, and play that support lifelong learning and meaning-making. Evidence suggests that families are looking for, and benefit from, intergenerational experiences. Market research done by Reach Advisors demonstrates that today's families seek authentic, hands-on, active experiences that can be shared by all family members. Studies show that designing genuinely intergenerational exhibits and programs that consciously meet the needs of families and foster dialogue across age, supports the creation and sustainability of a nation of learners. "During childhood, people develop a foundation for lifelong learning," writes family learning leader and *Forest to Frigate* consultant Lynn Dierking, "family members play a vital role in helping children develop a joy for learning and an understanding that learning is a process, something that all children *and* adults do, all their lives." The Museum's commitment to families within its galleries and to advancing professional practice in family engagement is an institutional core value and a personal passion for the Museum's staff. Thanks to ongoing support from IMLS, the Museum has adopted and continues to advance and share with the field a research-based interpretative and philosophical approach to exhibit and program development that puts the family at the center. Families will be involved in the *Forest to Frigate* project at every stage. Front-end evaluation with families about this project in July 2013 informed the development of the content. [See SuppDoc 2] Iterative prototyping of each exhibit and program element will ensure that the final product is designed to meet the needs and match the interests of families.

Publicity plans: The Museum's communication plan for *Forest to Frigate* will target families, and the project's results will be shared with Museum professionals. Families will be invited to participate through ongoing communications via libraries, family event calendars, social media, Museum website, Museum newsletter, and onsite. The media plan for this project will leverage local, regional, and national interest in the Ship's restoration. Intense fascination in past restorations enables the Museum to realistically expect a proliferation of print, digital, radio, and television coverage. The Museum will capitalize on this increased attention to promote the project. Professionals will learn about findings through the Museum's website dedicated to family learning (familylearningforum.org), as well as through publications, conferences, and roundtables. [See SuppDoc 3]

Intended results: 1) Expand the Museum's capacity to serve families by creating a memorable, engaging, and informative exhibit and integrated programs; 2) Spark a cross-disciplinary interest in and increased appreciation for USS *Constitution*'s innovative design and construction; 3) Foster emotional and personal connections; and 4) Share findings with the field. **Project outputs** will include a 3,400 square foot exhibit and program space (2,400 inside and 1,000 outside under a 3-season tent) that includes at least: 8 manipulative interactives, 1 computer animation, 1 computer interactive, 1 film depicting the making and use of an ax, 5 full-scale photo cutouts, 3 large graphics including a 5' map of Boston, 1 large environment evoking a forest of live oak trees, 1 large replica section of *Constitution*'s hull, 1 ten foot frigate skeleton made of foam, 12 artifacts, 11 staff-led participatory gallery programs, 2 Quests, 2 special events, 1 StoryWalk©, and 5 essays on the Museum's website devoted to family learning (familylearningforum.org), 1 article, and 3 presentations.

How the project fits into the Museum's Strategic Plan and Mission: The USS Constitution Museum is a private, non-profit museum established in 1972. Its mission is to "serve as the **memory** and **educational voice** of USS *Constitution*." The *Forest to Frigate* exhibit and integrated programs enable the Museum to better fulfill its mission by providing new opportunities for families to engage with the Museum's groundbreaking research on the Ship and those involved in her design and construction. By highlighting STEM content within the historical context, the Museum will offer new pathways for discovery and engagement. The Museum's current Strategic Plan (2014-2016), passed by its Board of Trustees in November 2013 maximizes the opportunity that the Ship's restoration represents. [See Strategic Plan Summary and SuppDoc 4]

The *Forest to Frigate* project is central to the Museum's Strategic Plan, fulfilling two primary strategic objectives: (1) *Increase awareness of* Constitution*'s innovative design, construction, and preservation through engaging and memorable hands-on experiences*; and (2) *Increase visibility and be recognized as an innovative and dynamic institution providing positive memorable experiences for all ages*. To achieve these objectives, the Museum will ✯ Create a new exhibit, *From Forest to Frigate*, addressing the Ship's design and construction. ✯ Offer hands-on programs allowing visitors of all ages to gain greater appreciation for the design and structure of *Constitution*. ✯ Offer programs for groups and families that encourage collaboration, exploration, and discovery while meeting curriculum frameworks ✯ Enhance the interpretation of *Constitution* by using the Ship as a lens to talk about science, technology, engineering, and math (STEM). ✯ Provide opportunities for visitors to experiment with STEM concepts including fluid dynamics, material science, and structural engineering. ✯ Create 3-season programming space for STEM-based activities that may be wet, noisy and/or active. ✯ Provide opportunities for local residents to appreciate the role of Boston craftsmen in building and maintaining *Constitution*. ✯ Expand leadership in family learning through innovation and experimentation to advance professional practice. ✯ Identify successful techniques for program facilitation and disseminate findings with colleagues via publications, presentations, and familylearningforum.org.

2. PROJECT WORK PLAN - Project design: The *Forest to Frigate* exhibit and programs will be grounded in existing and emerging family learning theory and practice. The guiding exhibit design principle is based on the PISEC (Philadelphia-Camden Informal Science Education Collaborative) study which concluded that to encourage family learning exhibits should be multi-sided, multi-user, accessible, multi-outcome, multi-modal, readable, and relevant. Through a 2004 IMLS funded National Leadership Project, the Museum demonstrated that these techniques, often used to engage families in science exhibits, also work with families in history museum exhibits. [See SuppDoc 5] Extensive formative evaluation with over 2,500 families connected to the Museum's nationally recognized family learning study resulted in an approach to an exhibit that leads to longer engagement, and higher satisfaction and enjoyment. About our approach to exhibits, a grandfather wrote, "You

managed to keep two octogenarians and three teenage boys thoroughly engaged. No mean feat in either case." The effective formula that emerged includes providing opportunities for emotional as well as intellectual connections; telling the story through people (first person text labels, full-scale cut outs); short text segments (50 words); incorporating questions and activities that trigger conversation; and grouping engaging text, artifacts (both original and reproduction), images, and interactives together to appeal to multiple learning styles. The lack of existing corresponding models for programs compelled the Museum to pursue a new IMLS-funded National Leadership Grant titled *Engage Families* to identify characteristics of family programming that result in active intergenerational engagement, enjoyment, and learning in museums. This current initiative (2013-2016) will overlap and directly inform the development of the *Forest to Frigate* programs. [See SuppDoc 6]

Both the exhibit and programs will be designed to encourage participation, exploration, and conversation about the project's themes. The interdepartmental project team developed the theme based on input from family visitors. **Overarching theme:** *USS* Constitution*'s construction reflected innovation, ingenuity, and ambition in Boston and the nation*. **Subthemes:** 1) Constitution *was a powerful symbol of the United States' aspirations and ambitions*; 2) Constitution*'s designers and builders enhanced traditional shipbuilding designs and embraced innovative solutions to build a superior ship*; and 3) Constitution *was built in Boston by skilled American craftsmen using the best of native materials*. **STEM concepts** including probability, material science, fluid dynamics, structural engineering, simple machines, and momentum will be highlighted within a humanities context. The approach and concepts conveyed in the *Forest to Frigate* project align with the **Next Generation Science Standards (NGSS)** including: Scientific and Engineering Practices (asking questions and defining problems, planning and carrying out investigations, and designing solutions) and Cross-Cutting Concepts (cause and effect and structure and function). The hands-on exhibit elements and associated programs address **21st Century Skills**, including critical thinking and problem solving, creativity, communication and collaboration, cross-disciplinary thinking, and themes such as global awareness. The project will be organized in five sections detailed below. The construct for each will be a cross-disciplinary hands-on and minds-on challenge. Families will encounter a person from the past who presents a challenge or "mission." "Mission details" will provide participants with the necessary background information and the section's interactive will encourage exploration of each challenge. The design will integrate objects and images with the research, text, figure, and interactive to support each section's big idea. [See SuppDocs 7, 8, 9, and 10]

Section 1: "**Build a navy?**" will convey how the newly independent United States built a navy to protect trade vital to its economy and to project its strength and ambitions to the world. **The figure** of George Washington will represent the section and families will be encouraged to stand in his shoes figuratively and literally. Shoes adhered to the ground will help families contemplate their challenge. **The challenge**: "*You are the country's first president. How do you protect your trade from piracy and tell the nations of Europe that America's rights should be respected?"* Families will be provided with **mission details** to provide context for the decision. In this section details will include, "*Trade is vital to the fledgling economy. Barbary corsairs are robbing defenseless merchant ships removing valuable merchandise and men. The Dey of Algiers is demanding money to stop the harassment of American shipping. Do you pay the tribute or build a navy to protect your ships?*" An **interactive** game will help family members explore the topic together. In this section Museum staff will develop a **"**Perils at Sea" board game to encourage family members to take the part of merchant captains to illustrate both the perils at sea and how important trade was to the nation's economy. **Objects and images** will include an image of Barbary corsairs capturing the crew of an American vessel and a copy of the 1794 Naval Armament Act. **Programs** will include a "Trade Mission" gallery program that utilizes reproduction trade goods and a map to show where the goods are coming from and their value to the country's economy. A "Perils at Sea" Quest will encourage families to collect trade goods hidden in the galleries and return home (Museum front desk) without being captured. A special "Piracy Day" will invite pirate enthusiasts to explore the difference between pirates and corsairs, and how the navy was built in response to threats to American trade. A "Design Your Own Figurehead" program will allow families to work together and explore the symbolism embedded in *Constitution*'s first figurehead of Hercules and the significance of the name "*Constitution*." In addition to addressing the **STEM** concepts of probability and economics, this section will be designed to encourage asking questions and defining problems identified within the **NGSS**, as well as the **21st Century Skills** of critical thinking and problem solving, global awareness, and communication and collaboration.

Section 2: "**Cutting-edge design"** will convey that *Constitution*'s innovative design made her faster and more powerful than her potential opponents. **The figure** of Joshua Humphreys, the designer of the first six ships of the new United States Navy, will represent this section. Families will be encouraged to step into Humphreys' shoes and contemplate his challenge. **The challenge:** "*The United States has no navy. The young country has little money to build one. What ships should you design*? *Every decision determines the number of ships you will build, how fast they will sail, and how many guns they will carry*." Part of the **mission detail** will explain that "*Each decision about the ship's length and width is a tradeoff between speed and stability."* A "Design Challenge" computer **interactive** will allow families to design and then test a ship to achieve the perfect balance between speed and strength. After visitors select an approach, Humphreys' choice is revealed. **Objects and images** will include original drafting curves owned by one of Humphreys' assistants and a copy of the original building plan. **Programs** will include "Outgunning the Enemy" and "Ship Shape" that invite families to make aluminum foil boats and test them in a water tank for speed and capacity for carrying cannon. These programs will utilize 3D forms to illustrate the typical warships of the time to illustrate how Humphreys took the best features of each to design a new faster, more powerful ship. This section will address the **STEM** concept of fluid dynamics; critical underpinnings of **NGSS** including planning and carrying out investigations, designing solutions, cause and effect, and structure and function; as well as the **21st Century Skills** of critical thinking and problem solving, creativity, cross-disciplinary thinking, and communication and collaboration.

Section 3: "**The real iron in *Old Ironsides***" will communicate how native live oak gave *Constitution* superior strength and durability. **The figure** of John T. Morgan, the man responsible for procuring the wood, will stand within a created environment evocative of a forest. Families are presented with a **challenge**: "*You need ships that will be strong enough to withstand enemy cannon fire and long-lasting enough to be economical*." Information in their **mission detail** includes, "*The wood used will determine strength and durability. The best wood may come with a price (human and economic). Which do you choose?"* The **interactive** will involve stations where visitors can test the properties of live oak, pine, and white oak by weighing them and use an auger to get a sense of the different densities. Once visitors decide on a wood type, they will learn that the procurement of live oak came at a great human cost (over sixty people died), great expense (the cost exceeded the budget by 260%), and made the construction take 3x longer. They will also hear from Morgan, *"Everybody is sick here, and if I am to stay here 'til all the timber is cut, I will be dead."* **Objects and images** will include an axe used by Jacob Sibley to cut timber for *Constitution*. Families will also see how the axe was made and used through a short film produced by the Museum. Plates from *The Timber Merchant's Guide* will illustrate how parts of the Ship were taken strategically from specific parts of a tree to utilize the natural strength. **Programs** will include "From Trees to Knees" which will utilize a 3D puzzle of a tree with a corresponding skeleton of the Ship showing where the pieces go. This section will highlight material science within **STEM**; planning and carrying out investigations, cause and effect, and structure and function within **NGSS**; and problem solving, communication and collaboration, and cross-disciplinary thinking identified as **21st Century Skills**.

Section 4: **"Constructing *Constitution"*** will convey how the building of *Constitution* was a massive undertaking requiring the skill and ingenuity of Boston's best craftsmen. Participants will meet the **figure** of Edmund Hartt who owned the shipyard where *Constitution* was built. The **challenge** is to assemble the largest ship ever built in Boston. The **mission detail** includes information about the scale of *Constitution* (the Ship towered over the waterfront buildings) and all the parts and people necessary to build the largest, strongest ship ever built in Boston. The **interactive** will begin with an animation created for this project showing the construction of *Constitution* through drawings by internationally-acclaimed British artist Stephen Biesty. Then families will be challenged to assemble their own ship while racing against a clock. In the exterior portion of the exhibit (adjacent to the interior gallery and easily accessible by double doors), there will be a group of challenges where participants need to work together, including assembling a 10-foot foam ship, stepping a mast, and hauling heavy material using pulleys. A large interactive map of Boston will encourage families to identify and gather all the men (including Paul Revere who supplied the bell and copper fasteners) and women (including those who supplied ensigns and clothing) necessary to supply the material needed. **Objects and images** will include a carpenter's receipt for work done on *Constitution* showing the names and rate of pay of the craftsmen who shaped her. A bevel owned by the Ship's constructor George Claghorne will show an original tool used to measure angles, and a ceramic jug given to Edmund Hartt depicting a shipbuilding scene.

This section will also include one of the original copper bolts supplied by Paul Revere and a full scale section of *Constitution* showing the framing, unique structural elements, and fasteners. A large pulley used in the building and early repairs of *Constitution* will be on display to help transport visitors back to the 1790s when the object was first used. Original pay receipts for materials supplied for *Constitution* will allow families to see the names, type of service rendered, and payment given. **Programs** will include hands-on opportunities to try shipbuilding skills such as caulking, rolling copper, and sewing sails. A Maritime Trade Festival showcasing different maritime trades will provide families with the opportunity to meet today's men and women who are responsible for *Constitution*'s current restoration, including the Ship's sailmaker, blacksmith, and riggers. Families will be given opportunities to make rope, sew a flag, and sign a piece of copper that will be installed on *Constitution*'s hull during the course of the restoration. Families can also do a StoryWalk© of David Weitzman's richly illustrated *Old Ironsides: Americans Build a Fighting Ship* (Houghton Mifflin, 1997) outside with each page displayed on the fence surrounding *Constitution*. A "Boston Builds a Fighting Ship" Quest that families can print out from the Museum's website will encourage families to explore the section of Boston where the Ship was built and learn about the town and the people involved in the 1790's. This section will highlight the **STEM** concepts of structural engineering and simple machines; tenets of the **NGSS** including asking questions and defining problems, cause and effect, and structure and function; and the **21st Century Skills** of communication and collaboration, and cross-disciplinary thinking.

Section 5: **"Launching a legend"** will demonstrate the big idea that USS *Constitution* represented the pride, ambition, and achievement of Boston and the country when she finally slid into the water in 1797. Here families will encounter the **figure** of *Constitution*'s constructor, George Claghorne, with the following **challenge**, "*The whole town is watching – How do you safely launch the largest ship ever built in Boston?"* **Mission details** include, "*The ship is long and heavy. If it moves down the ways too fast it may be strained or damaged. If it moves too slowly, it will not have the momentum to make it into the water. You must set the launching ways so that the ship makes it into the water undamaged."* The **interactive** allows families to change the angle of the launching ways to try to launch *Constitution* safely. Participants will learn that on the day of the launch Claghorne warned spectators that the Ship's descent into the water might cause a dangerous tidal wave. A crowd of dignitaries and local residents swarmed on roof tops and nearby islands to watch the monumental event. They waited and waited, but the Ship hardly moved. Families will learn that although *Constitution* took three tries to launch, the Ship would go on to be the most fortunate ship in our country's history. **Objects and images** will include: reproductions of the broadside warning of the tidal wave, a 21st century artist's depiction of the Ship's launch, a circa 1803 painting of *Constitution* depicting how she appeared after her launch, and a large model showing the Ship with all of her sails set. **Programs** will include "The Launching: A Comedic Sketch Based on the True Events of 1797" which incorporates real quotes from newspapers of the time to dramatize the event with a humorous modern twist. This section will communicate the **STEM** concept of momentum; the **NGSS** goals of cause and effect; and encourage the use of **21st Century Skills** including critical thinking and problem solving, communication and collaboration, and cross-disciplinary thinking.

Evaluation: The Museum is exemplary in its commitment to evaluation, and staff has expertise in prototyping and utilizing visitor feedback as demonstrated on the Museum's website devoted to family learning (familylearningforum.org). The staff is dedicated to engaging in a meaningful partnership with families from the project's earliest stages. The Museum will use formative evaluation tools and discussion sessions to offer families a chance to provide rolling feedback on exhibit components (including interactives, text, and programs). The Museum will use an iterative process of testing and revision for the interactives and programs. Elements will be tested and modified until it achieves a consistent 4-5 star rating from visitors who are asked to rate the activity on a 5-star scale, similar to a movie review. If an interactive fails to resonate or achieve its objectives during prototyping, the Museum will replace it with an alternate element. Evaluator Marianna Adams, president of Audience Focus, will develop tools, train staff, establish evaluation protocols, and analyze data. Both formative and summative evaluation with participants of all ages will ensure that the project is engaging and informational, appeals to children *and* adults, and meets our stated goals. [See SuppDoc 11]

Project management and staff: The project's core in-house steering committee (Museum President, Anne Grimes Rand; Director of Exhibits, Robert Kiihne; and Director of Collections and Learning, Sarah Watkins) have an eighteen-year proven track record of managing and executing large scale and nationally recognized

research, exhibit, and family learning initiatives. **Anne Grimes Rand**, President, will be responsible for overall leadership, fundraising, and marketing. Over the last 25 years at the Museum, Rand has provided leadership for all programmatic and exhibition projects. **Sarah Watkins,** Director of Collections and Learning, will be the project director overseeing the project content, implementation and programs. She has extensive experience developing award-winning content for a family audience. **Robert Kiihne**, Director of Exhibits, will be project manager for exhibit development. Kiihne has overseen the design, fabrication, and maintenance of exhibits for 25 years and served as project manager for familylearningforum.org. The project's management will benefit from Kiihne and Watkins' completion of a Project Management for History Professionals course. Techniques for successful project management will include outlining and agreeing upon clear expectations and milestones at the outset, and building ongoing communication between the project team and stakeholders. Rand, Watkins, and Kiihne will meet weekly and will be responsible for correcting the project's course as necessary. They will be joined twice monthly by an interdepartmental project team including members of the Curatorial (Research Historian **Matthew Brenckle**, Manager of Collections and Exhibits **Harrie Slootbeek**), Exhibits (Media Manager **Jon Christensen**), Museum Learning (Manager of Academic and Family Programs **Rebecca Crawford**, Manager of Gallery Operations **Gary Foreman**, Manager of Public Programs **Lauren McCormack,** Manager of Interpretation and Visitor Services **Jennifer Zanolli**), and the Finance and Development departments responsible for the fiscal administration of the grant, its promotion, and related fundraising (Director of Finance and Administration **Jacqueline Hibbard**, Development Officer **Jodie McMenamin,** Director of Development **Laura O'Neill**). Museum **Educators** will facilitate the programs developed, and **Evaluators** will be hired to survey guests and gather data. [See Resumes]

Consultants with appropriate expertise have committed to this project to increase its potential for success. Historical content consultants (**Robert Allison**, **Robert Martello, Tyrone Martin, Virginia Steele Wood**) will review the humanities content. STEM educators (**Ari W. Epstein, Karen Worth**) will work with Museum staff to ensure authentic and appropriate inclusion of STEM concepts. These STEM consultants will also provide training for front line Museum staff to increase their comfort level in making STEM connections with families. Staff from **Conner Prairie** will share findings from their NSF-funded project to integrate STEM within history exhibits. Museum project staff will consult with shipbuilding and naval architecture advisors (**CDR Sean Kearns, Mystic Seaport staff**) to ensure that the interpretation of *Constitution*'s design and construction is accurate and compelling. A family learning expert (**Lynn Dierking**) and an exhibit designer (**Gail Ringel**) will assist project staff in creating experiences that invite participation and collaboration and where families can have an enjoyable, educational, and social experience. Project staff will also have access to the Museum's current National Leadership Grant Steering Committee focusing on identifying conditions necessary to foster intergenerational learning and engagement. [Cited in Suppdoc 5] An award winning, internationally-renowned artist and writer will be hired as **project service providers**. **Stephen Biesty** will create original drawings of *Constitution* being built that will be turned into an animated loop, and **Richard Platt** will be hired to write exhibit text that sparks conversation, engagement, and learning. [See Resumes and Suppdoc 12]

Project resources - Time: This project is central to the Museum's strategic plan and is considered its highest priority initiative for *Constitution*'s restoration period. As such, it will be the focus for members of the Museum's visitor experience team (Curatorial, Museum Learning, and Exhibit department staff). Staff's non-critical, non-time sensitive on-going responsibilities will be put on hold as needed to allow for the time necessary to complete this project. The Museum has developed a comprehensive plan of work to ensure the project will be effectively managed and brought to a successful conclusion. The *Forest to Frigate* project will be fabricated, tested, refined, and publicized in a two-year period. The Museum is confident that the timeline proposed is achievable. The project is broken down into three phases. During the first phase, prior to the start of the grant period, project staff will: create research notebooks for each section of the exhibit; travel to Conner Prairie to learn about the integration of STEM in a history museum setting; travel to Mystic Seaport Museum to discuss their staff's wooden boat experience building *Amistad* and restoring the *Charles W. Morgan*; and prototype 3 interactives and 3 programs. If funded, the first year of the grant period will result in the fabrication and formative evaluation of all exhibit elements, and the prototyping and implementation of 4 programs. The grant's second year will bring refined exhibit elements (based on evaluation results), summative evaluation, and the final 3 programs, as well as the dissemination of the project's findings. [See Schedule of Completion]

Budget: This project's budget leverages in-house capacity from a well-seasoned exhibit development team (design, production, prototyping, and evaluation), and assets already assembled (research, film depicting the making and use of a shipbuilder's ax, and a full scale exhibit element depicting a section of the Ship). The total cost of the two-year project is $568,329 including direct and indirect costs. The money requested from IMLS ($150,000) will support the implementation of 16 programs, 10 interactives, engaging text, and formative and summative evaluation. The Museum economized by assuming production responsibilities in-house such as graphic design, printing and lamination, and prototype fabrication.

Fundraising plans: *Forest to Frigate* will be the focus of the Museum's programmatic fundraising efforts. The funding strategy will include foundation support, major gifts from individuals, competitive grants from federal and state agencies, and corporate support. The Museum is confident in its ability to raise the necessary capital. Over the last four years, the Museum has successfully met the increase in its operating budget from $2.3 million in FY10 to $2.7 million in FY13. At the same time, the Museum raised $300,000 to $500,000 annually in additional restricted funding for programmatic initiatives and increased its endowment by $1,000,000.

3. PROJECT RESULTS - The *Forest to Frigate* project will begin as USS *Constitution* enters dry dock for the first time in 20 years, providing the Museum with a singular opportunity to engage all ages in conversation and discovery about the Ship, her innovative design, and the many hands involved in the massive undertaking necessary in building the Ship in the 1790s. This grant will enable the Museum to maximize the opportunity that the dry docking presents by dramatically expanding institutional capacity to share and excite families in the stories of *Constitution*'s origins and the Ship's ongoing history. These offerings will have strategic benefits to the Museum by strengthening its reputation as a dynamic center for learning and exploration. Participants will have a satisfying and memorable experience, leaving with an enriched view of museums as enjoyable centers for family engagement. Families will make emotional connections to the story and discover that history can be exciting, meaningful, and personally relevant. Families will see the Ship as cutting edge in the 1790s and gain appreciation for the unprecedented effort then and now to keep her afloat.

Grant outcomes: The long-term impact of the *Forest to Frigate* project is increased capacity to engage families. Success will be measured through interviews, surveys, observations, and donation records. [See Logic Model in SuppDoc 11] Participants of the integrated exhibit and programs will:

1) Learn something new about USS *Constitution*'s design and construction, and/or the people connected to her origins. *Measurable indicators:* At least 60% of participants gain increased understanding and are able to recount one fact about the Ship's construction.

2) Feel an emotional connection to the project. *Measurable indicators:* At least 60% of participants report that their experience fostered excitement, engagement, or empathy.

3) Perceive the Museum as a valuable learning and engagement resource. *Measurable indicators:* At least 60% of families report that they would recommend the Museum to others for learning and fun; and the average time families spend in the Museum increases and the average donation per person increases.

Impact and sustainability beyond the grant period: The Museum has a strong track record for being a learning institution that strives to be the best museum possible through a continuous process of reflection, evaluation, and renewal. The Museum has an equally well-documented commitment to helping inform professional practice by devoting itself to top-notch audience research and sharing its findings with the field. Within the Museum walls, *Forest to Frigate* is a long-term exhibit and program initiative. It will have a direct impact on an estimated 4 million visitors during the first 10 years following the project's completion. This project's deliberate alignment with the Museum's concurrent National Leadership Grant, *Engage Families,* means it will also inform professional practice for years to come. The Museum's National Leadership Grant will utilize the *Forest to Frigate* exhibit space, content, and programs to test the conditions necessary to develop genuinely intergenerational learning and experiences. Built into the National Leadership Grant is a framework and funding for dissemination. The *Forest to Frigate* project will be a long-term, new effort to excite and inform families seeking to find the sweet spot between exhibits and programs, humanities and STEM, for young and old. What is learned from this project has the potential to change future offerings within the Museum walls and beyond.

From Forest to Frigate
USS Constitution Museum
Schedule of Completion

Year 1 (Oct 2014 - Sep 2015)	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Outcomes
Project Administration													
Weekly meetings led by Project Director	■	■	■	■	■	■	■	■	■	■	■	■	Project Management Team completes activities in an timely, organized, and efficient manner
Twice-monthly meetings of entire Project Team	■	■	■	■	■	■	■	■	■	■	■	■	Ensure completion of activities in an timely, organized, and efficient manner
Refine Logic Model	■	■											Update logic model based on front end evaluation in summer 2014
Visit Mystic Seaport	■												Meet with Mystic's exhibit and program staff to discuss STEM, ship building, and best practices
Consultant communications	■	■		■	■		■					■	Consultants provide input at key decision points to keep project on track and on schedule
Contracting with Service Providers	■	■	■										Contracts signed in a timely manner
Refine PR effort	■	■	■	■	■								Finalize strategic communications plan
PR effort underway						■	■	■	■	■	■	■	Maximize the promotion of the project
Evaluator develops evaluation instruments								■	■				Evaluator develops protocols and instruments
Hire and train evaluation interns									■				Interns ready to conduct prototype evaluations
Formative evaluation conducted										■	■	■	Interns gather feedback on exhibit usage
Exhibit Development													
Review exhibit outline with consultants	■	■											Consultants review outline for content and exhibit best practices
Revise Summer 2014 initial prototypes based on visitor feedback	■	■	■										Identify and solve issues presented in formative evaluation
Exhibit outline and research notebooks given to exhibit writer			■										Final outline and research summaries given to writer
Writer drafts text, interactive, and object labels based on input			■	■	■	■							Consultants and Museum staff provide ongoing feedback to writer
Test revised prototypes				■	■	■							Indentify problems related to the final form of each element
Fabricate interactives, scenic elements, characters and text panels						■	■	■	■				Elements reflect results of repeated evaluation and represent visitors' needs and interests
Exhibit opens to public with first round of prototypes										■			Exhibit opens in time for July 4th and the start of peek summer visitation.
Program Development													
Make key changes to 3 pre-grant programs and continue to offer them	■	■	■										Pre-grant programs are tested and redesigned based on results of pre-grant evaluations
Research and develop 4 new gallery programs		■	■	■	■	■	■	■					Prepare in-depth manuals reviewing each programs' content and presentation style
Research & develop 2 new family Quests		■	■	■	■	■	■	■					Quests present the most up-to-date historical research and a unified family-friendly theme
Design and fabricate the props needed for the gallery and Quest programs					■	■	■	■					Program components are created and ready to be prototyped
Offer training on new programs and STEM content									■				Staff are prepared to independently lead new programs
Plan & develop 1 special event program									■	■	■		Event contractors are contacted and staff are prepared to offer special events
Prototype 4 new gallery programs and 2 new Quests										■	■	■	Staff facilitate and evaluates new gallery programs and Quests
Offer 1 special event program												■	Museum reaches a local and tourist audience with enhanced daily offerings

From Forest to Frigate
USS Constitution Museum
Schedule of Completion

Year 2 (Oct 2015 - Sep 2016)	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Outcomes
Project Administration													
Weekly meetings led by Project Director	■	■	■	■	■	■	■	■	■	■	■	■	Project Management Team completes activities in an timely, organized, and efficient manner
Twice-monthly meetings of entire Project Team	■	■	■	■	■	■	■						Ensure completion of activities in an timely, organized, and efficient manner
Consultant communications	■	■	■	■	■	■	■						Consultants provide input at key decision points to keep project on track and on schedule
PR effort continues	■	■	■	■	■	■	■	■	■	■	■	■	Maximize the promotion of the project
Evaluator Marianna Adams analyzes results	■												Determine areas of improvement
Conduct summative evaluation on all project components								■	■	■			Collect data for final analysis
Evaluator analyzes all data collected to measure project's success											■	■	Final analysis of all exhibit element for effectiveness to reaching goals
Exhibit Development													
Refine exhibit elements based on formative evaluation		■	■	■	■	■							Alter and reconstruct exhibit elements based on visitor feedback
Printing of final text and graphics					■	■	■						Ensure durability of graphics and text
Program Development													
Research and develop 4 new gallery programs	■	■	■	■									Prepare in-depth manuals reviewing each program's content and presentation style
Research & develop 1 StoryWalk©		■	■	■									The StoryWalk© will reinforce exhibit themes while encouraging family literacy
Make key changes to Year 1 programs and continue prototyping			■	■	■								Programs are tested and redesigned based on results of evaluations
Design and fabricate the initial prototypes for the gallery and StoryWalk© programs					■	■							Program components are created and ready to be prototyped
Offer training on new programs and STEM content						■							Staff are prepared to independently lead new programs
Prototype 4 new gallery programs and StoryWalk©						■	■	■	■	■	■		Staff facilitate new gallery programs and StoryWalk©
Refine programs based on rolling feedback from families							■	■	■	■	■		Finalize programs based on input from families
Plan & develop 1 special event program								■	■				Event contractors are contacted and staff are prepared to offer special events
Offer 1 special event program										■			Museum reaches a local and tourist audience with enhanced daily offerings
Dissemination													
Present at regional and national conferences		■							■			■	Present at conference to share results with professionals
Upload prototypes, case studies, and essays to Familylearningforum.org							■	■	■	■	■	■	Encourage "best practices" by disseminating resources to museum and library professionals
Write article for *Journal of Museum Education*										■	■	■	Encourage "best practices" by disseminating resources to museum and library professionals